2008 Annual Inspection for the Gunnison, Colorado, UMTRCA Title I Disposal Site

Summary

The Gunnison, Colorado, Disposal Site, inspected on June 3, 2008, is in excellent condition. Fence strands were broken in several locations due to significant snow accumulations during the past winter. Several perimeter signs had substantial bullet hole damage and one sign was missing. The fence was repaired, and the damaged and missing signs were replaced on June 19, 2008. Six riprap test areas on the cell apron and diversion ditches were visually inspected; no apparent rock degradation was noted when compared to photos taken in 2007. Snowmelt runoff resulted in minor erosion near the southeast corner of the site. No cause for a follow-up inspection was identified.

1.0 Introduction

This report presents the findings of the annual U.S. Department of Energy (DOE) inspection of the Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I disposal site at Gunnison, Colorado.

R. Johnson (Chief Inspector) and S. Beranich (Assistant Inspector), both of S.M. Stoller Corporation, the Legacy Management (LM) Contractor at the DOE office in Grand Junction, Colorado, conducted the inspection on June 3, 2008. W. Naugle of the Colorado Department of Public Health and Environment participated in the inspection. The disposal site inspection was conducted in accordance with the *Long-Term Surveillance Plan* (LTSP) *for the Gunnison, Colorado, Disposal Site* (DOE/AL/62350–222, Revision 2, April 1997) and procedures established by DOE to comply with requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27).

The purposes of this annual inspection were to confirm the integrity of visible features at the site, to identify changes in conditions that may affect site integrity, and to determine the need, if any, for maintenance or additional inspections and monitoring.

2.0 Institutional Controls

The 92-acre disposal site is owned by the United States of America and was accepted under the U.S. Nuclear Regulatory Commission general license (10 CFR 40.27) in 1997. DOE is the licensee and, in accordance with the requirements for UMTRCA Title I sites, is responsible for the custody and long-term care of the site. Institutional controls at the disposal site, as defined by DOE Policy 454.1, consist of federal ownership of the property, a site perimeter fence, warning/no trespassing signs (referred to as perimeter signs) placed along the property boundary, and a locked gate at the entrance to the site. Verification of these institutional controls is part of the annual inspection, and the results are included in this report.

3.0 Inspection Results

3.1 Specific Site Surveillance Features

Features discussed in this report are shown on the attached drawing. Photographs to support specific observations are identified in the text and on the drawing by photograph location (PL) numbers.

3.1.1 Access Road, Fence, Entrance Gate, and Entrance and Perimeter Signs

Access to the disposal site is directly off U.S. Bureau of Land Management (BLM) Route 3068. The road, an all-weather gravel road maintained by the BLM, is in good condition.

A 3-strand, barbed-wire fence encompasses the site, and most of it is set along the property boundary. Fence strands were broken at several locations along the north and west sides of the site (PL–1). This damage is attributable to the above-average snow accumulation that occurred during the past winter. The broken strands subsequently were repaired on June 19, 2008. The south entrance gate is a barbed-wire gate with a DOE lock. Two other locked barbed-wire gates—one on the north fence line and the other on the east fence line—provide monitor well access. The gates were locked and are in excellent condition.

The entrance sign, located at the south entrance gate, is in good condition. Forty-five perimeter signs are bolted to the perimeter fence posts. Nine perimeter signs were heavily damaged by bullets (PL–2) and one sign was missing; new signs were installed at these locations on June 19, 2008. The remaining signs are in good condition.

3.1.2 Site Markers, Survey Monuments, and Boundary Monuments

Both granite site markers, SMK–1 just inside the south entrance gate and SMK–2 on top of the disposal cell, are in excellent condition. Survey/boundary monuments, SM–1/BM–1, SM–2/BM–2, and SM–3/BM–3, and eight additional boundary monuments, BM–4 through BM–11, also are in excellent condition.

3.1.3 Monitor Wells

Sixteen wells comprise the groundwater-monitoring network at the disposal site. Six of the wells are for cell performance monitoring, two for monitoring background groundwater chemistry, and eight for water level measurements. The wells inside the site were secure and in excellent condition.

3.2 Transects

To ensure a thorough and efficient inspection, the site was divided into four areas referred to as transects: (1) the riprap-covered disposal cell; (2) the riprap-covered side slopes, apron, and diversion ditches; (3) the area between the cell and the site boundary; and (4) the outlying area.

Within each transect, inspectors examined specific site surveillance features, such as monitor wells, survey and boundary monuments, signs, and site markers. Inspectors examined each transect for evidence of erosion, settling, slumping, or other phenomena that might affect the integrity or long-term performance of the site.

3.2.1 Top of Disposal Cell

The top of the disposal cell is in excellent condition. There is no evidence of erosion, settling, slumping, or rock degradation. Several isolated patches of grass are randomly distributed over the disposal cell cover; however, these shallow-rooted plants are not a cause for concern. A small shrub was found and will be removed. Many small indentations are present on the cell cover. The indentations, with dimensions up to 4 inches across and up to 4 inches deep, appear to have been caused by pronghorn antelope. None of the indentations penetrate into the bedding layer under the rock cover and are not a cause for concern.

3.2.2 Side Slopes, Apron, and Diversion Channels

The riprap-covered side slopes, apron, and diversion ditches also are in excellent condition (PL–3, PL–4, and PL–5). No evidence of slumping, settling, rock degradation, or encroachment of vegetation was observed.

The condition of the riprap in six monitoring test areas was visually inspected. The test areas, each roughly 1 square meter in area, are in critical flow path locations in the apron and diversion channels. The corners of each monitoring plot are marked with orange paint. The riprap in all of the test areas was in excellent condition. When compared with the photos taken in 2007, there was no evidence that individual rocks have split or otherwise degraded. As outlined in the LTSP, annual photographing and comparing of these test areas occurred through the 2002 inspection, and the test areas will be photographed every 5 years through 2017. The next photo documentation event will be in 2012.

At the southeast corner of the cell apron, water draining from the cell occasionally ponds in a low-lying area along the edge of the riprap. The riparian-type vegetation that has become established in this area indicates that the area retains moisture much of the time. Water collection in this area does not pose a problem because the cell is designed to drain to the southeast, and any water that ponds is below the elevation of the footprint of the tailings. Ponded water was present in the apron (PL–6) and the soil in this area was moist at the time of the inspection.

3.2.3 Area Between the Disposal Cell and the Site Boundary

Reclaimed and undisturbed areas occur between the disposal cell and the site perimeter. Both types of areas are in excellent condition. In general, reclaimed areas have good coverage of vegetation, mostly grass. However, there are several small areas of sparse vegetation attributable to poor soil conditions (PL–7). Shrub and forb abundance and diversity are much less in reclaimed areas than in undisturbed areas. Overall, however, the vegetation at the site is very healthy following a winter of above-average snowfall.

Several locations in areas of steep topography had been susceptible to erosion in the past. Snowmelt runoff caused minor rill erosion and sediment deposition at a location near the southeast corner of the site (PL–8). No erosion control is necessary at this time and the area is expected to stabilize; however, this area will continue to be monitored. All other areas were stable with no evidence of new erosion.

3.2.4 Outlying Area

Gunnison County owns the land that adjoins the disposal site boundary to the north and east, and uses the land for a municipal landfill. In 2001, the county installed several fences and monitor wells in these areas. The monitor wells are identified as County Wells 1, 2, and 3 on the inspection drawing. The county installed wire gates to allow DOE access to their monitor wells. None of their gates have locks.

Landfill operations have encroached to within approximately 400 feet of the northeast corner of the DOE property boundary. A diversion ditch was constructed on landfill property north of the site. This feature apparently is in place to control runoff and sediment transport on landfill property. Although landfill activities do not appear to pose a threat to the DOE disposal site, future inspections will continue to monitor the level of activity occurring near the DOE property boundaries and site surveillance features (e.g., fences and monitor wells).

4.0 Recommendations

1. A small shrub is growing on the disposal cell (page 3).

   Recommendation: The shrub will be removed or treated with herbicide.

5.0 Photographs

Photo Location Number	Azimuth	Description
PL–1	290	Broken fence strands near perimeter sign P8.
PL–2	0	Damaged perimeter sign P42.
PL–3	315	East diversion channel along the northeast side of the disposal cell.
PL–4	195	Southeast side slope of the disposal cell.
PL–5	90	West diversion channel.
PL–6	290	Ponded water at the southeast corner of the disposal cell.
PL–7	290	Poorly vegetated area near the east side of the disposal cell.
PL–8	180	Erosion area near the southeast corner of the site.

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GUN 5/2008. PL–1. Broken fence strands near perimeter sign P8.

GUN 5/2008. PL–2. Damaged perimeter sign P42.

GUN 5/2008. PL–3. East diversion channel along the northeast side of the disposal cell.

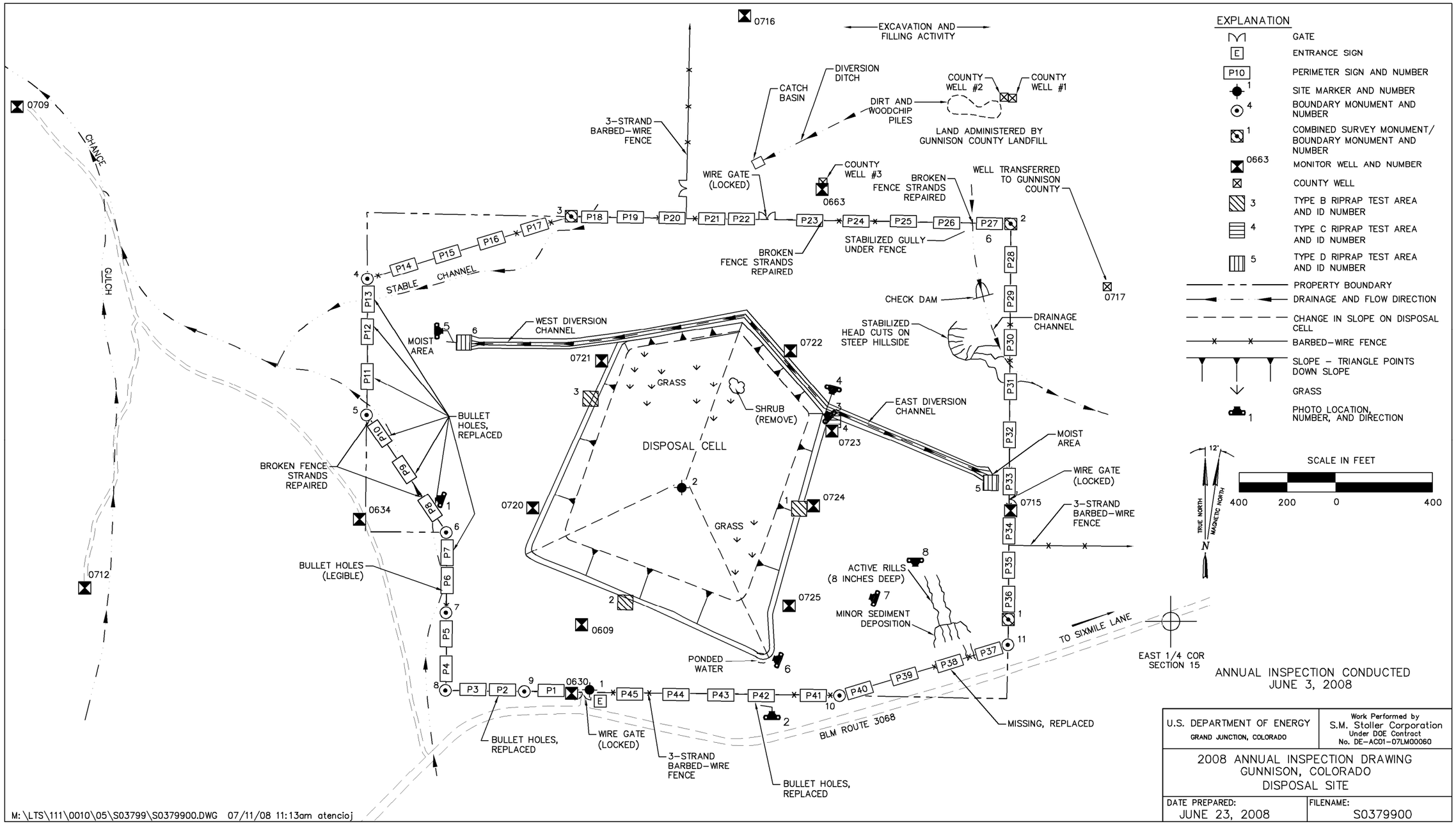
GUN 5/2008. PL–4. Southeast side slope of the disposal cell.

GUN 5/2008. PL–5. West diversion channel.

GUN 5/2008. PL–6. Ponded water at the southeast corner of the disposal cell.

GUN 5/2008. PL–7. Poorly vegetated area near the east side of the disposal cell.

GUN 5/2008. PL–8. Erosion area near the southeast corner of the site.


0716
EXCAVATION AND FILLING ACTIVITY
0709
CHANCE
GULCH
DIVERSION DITCH
CATCH BASIN
COUNTY WELL #2
COUNTY WELL #1
DIRT AND WOODCHIP PILES
LAND ADMINISTERED BY GUNNISON COUNTY LANDFILL
3-STRAND BARBED-WIRE FENCE
WIRE GATE (LOCKED)
COUNTY WELL #3
0663
BROKEN FENCE STRANDS REPAIRED
WELL TRANSFERRED TO GUNNISON COUNTY
0717
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
P13
P14
P15
P16
P17
P18
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P26
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P28
P29
P30
P31
P32
P33
P34
P35
P36
P37
P38
P39
P40
P41
P42
P43
P44
P45
STABLE CHANNEL
BROKEN FENCE STRANDS REPAIRED
STABILIZED GULLY UNDER FENCE
CHECK DAM
DRAINAGE CHANNEL
STABILIZED HEAD CUTS ON STEEP HILLSIDE
WEST DIVERSION CHANNEL
MOIST AREA
0721
0722
GRASS
SHRUB (REMOVE)
EAST DIVERSION CHANNEL
DISPOSAL CELL
0723
0724
0720
0725
0609
0712
0634
0630
BULLET HOLES, REPLACED
BROKEN FENCE STRANDS REPAIRED
BULLET HOLES (LEGIBLE)
MOIST AREA
WIRE GATE (LOCKED)
0715
3-STRAND BARBED-WIRE FENCE
ACTIVE RILLS (8 INCHES DEEP)
MINOR SEDIMENT DEPOSITION
PONDED WATER
BULLET HOLES, REPLACED
WIRE GATE (LOCKED)
3-STRAND BARBED-WIRE FENCE
BULLET HOLES, REPLACED
MISSING, REPLACED
BLM ROUTE 3068
TO SIXMILE LANE
EAST 1/4 COR SECTION 15
EXPLANATION
GATE
ENTRANCE SIGN
PERIMETER SIGN AND NUMBER
SITE MARKER AND NUMBER
BOUNDARY MONUMENT AND NUMBER
COMBINED SURVEY MONUMENT/ BOUNDARY MONUMENT AND NUMBER
MONITOR WELL AND NUMBER
COUNTY WELL
TYPE B RIPRAP TEST AREA AND ID NUMBER
TYPE C RIPRAP TEST AREA AND ID NUMBER
TYPE D RIPRAP TEST AREA AND ID NUMBER
PROPERTY BOUNDARY
DRAINAGE AND FLOW DIRECTION
CHANGE IN SLOPE ON DISPOSAL CELL
BARBED-WIRE FENCE
SLOPE – TRIANGLE POINTS DOWN SLOPE
GRASS
PHOTO LOCATION, NUMBER, AND DIRECTION
SCALE IN FEET
400 200 0 400
TRUE NORTH
MAGNETIC NORTH
N
ANNUAL INSPECTION CONDUCTED JUNE 3, 2008
U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION, COLORADO
Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2008 ANNUAL INSPECTION DRAWING
GUNNISON, COLORADO
DISPOSAL SITE
DATE PREPARED: JUNE 23, 2008
FILENAME: S0379900
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